

Remarks

Claims 1-14 are pending in this application. Claims 1-14 now stand rejected. Claims 1 and 14 have been amended.

Claim Rejections – 35 U.S.C. § 103

Claims 1-2, 4, 6, 8, 10, and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US 4,498,909 to Milner et al. in view of US 5,901,653 to Jennebach et al., further in view of US 5,720,165 to Rizzie et al. and further in view of US 7,228,806 to Dueck et al.

Claim 1 has been amended to recite that the coarse straw particles are allowed to completely combust in the depressions and that the combustion chambers receive and combust the combustion gas. As stated in the previous amendment dated May 19, 2010, gasification and combustion of straw presents a unique problem not common to other fuel sources such as wood chips. Combustion of straw leads to charring of the outer layers of the straw bale, which leads to large amounts of light un-combusted components that may be whirled up in the combustion chamber. The amendments to claim 1 clarify that the combustion gas passes through the grating and into the combustion chamber below; it then travels to the remaining components in the boiler. In contrast, Milner teaches a gas outlet 40 located near the top of the boiler, where it would be extremely susceptible to whirled up un-combusted ash particles. The depressions 32 would not collect and allow for such un-combusted ash to completely combust before entering the gas flow.

Furthermore, Applicant respectfully disagrees with Examiner that the depressions 32 would allow for complete combustion even if the gas flow did exit through the grating and combustion chamber. Milner is directed to wood chips having low ash content and therefore adds non-combustible refractory material (artificial ash) to his process in order to protect the

grate. (Milner, Col. 1, lines 12-13 and 64-67; and Col. 2, lines 14-18). The artificial ash is added at a rate to maintain a layer of ash “even at grate rotating speeds that are sufficient to provide adequate agitation of the fuel bed.” (Milner, Col. 5, lines 39-44). Accordingly, Milner is only concerned with maintaining an ash layer while still agitating the fuel, giving no indication that the ash particles are on the grate or in the depressions long enough to fully combust, especially considering the majority of the ash is artificial and non-combustible. Moreover, Milner indicates that “the amount of oxygen supplied to the gasification chamber is an amount suitable to provide the desired **partial** combustion of the fuel.” (Milner, Col. 7, lines 41-43). Milner’s device involves a continuous process where fuel and artificial ash are constantly being added and ash is being constantly removed. Applicant’s invention contemplates introducing an amount of straw (for example a bale) and allowing it to combust to completion before removing the spent ash.

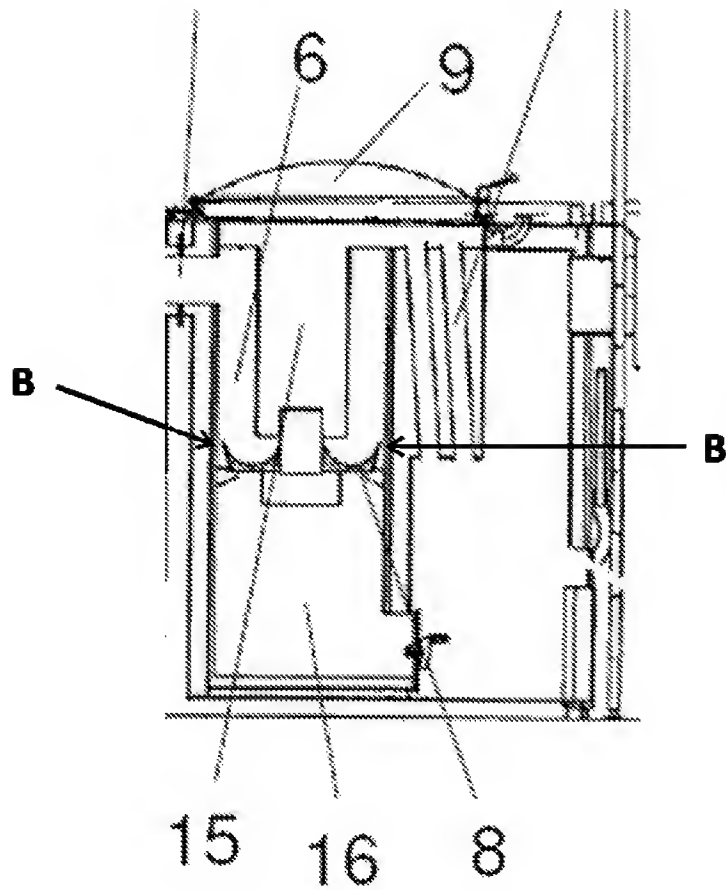
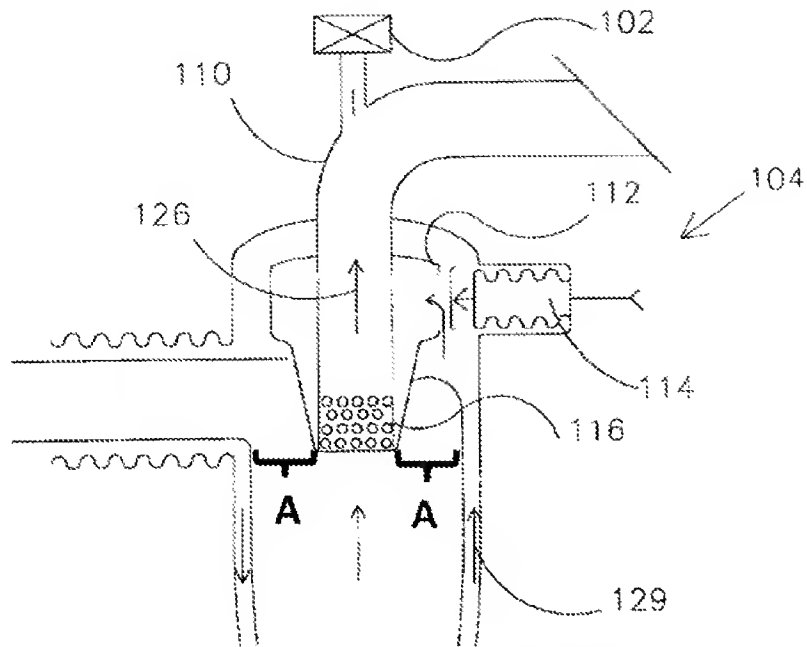
The importance of the depressions and their location are underscored by Dueck, which contemplates combustion of straw but also lacks the depressions of the claimed invention. Dueck instead requires an oxygen mixer 30 because many of the straw particles are not held in the fuel and gasification space long enough to fully combust and a silica collector 42 in the secondary combustion chamber to prevent buildup of silica characteristic of straw fuel. (Dueck, Col. 5, line 63 to Col. 6, line 15 and Col. 6, lines 40-44).

Accordingly, Applicant respectfully submits that claim 1 is patentable over Milner, Jennebach, Rizzie, and Dueck and requests the withdrawal of the rejection under 35 U.S.C. § 103(a) to claim 1. Claims 2, 4, 6, 8, 10, and 12 ultimately depend from claim 1 and are therefore patentable for at least the same reasons as above.

Claims 3, 5, 7, 9, 11, and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ‘909 in view of ‘653, ‘165, and ‘806 as applied to claims 1, 3 and further in view of US 6,758,149 to Oiwa et al. Claims 3, 5, 7, 9, 11, and 13 ultimately depend from claim 1 and Oiwa

does not rectify the deficiencies of Milner, Jennebach, Rizzie, and Dueck in rendering obvious claim 1.

With respect to claim 5, Applicant respectfully disagrees with Examiner's characterization that the annular opening of Rizzie in Fig. 6 is substantially as narrow as depicted in Fig. 2 of the present application. As stated in the May 19, 2010 amendment, the space in Rizzie constitutes a majority of the diameter of the separator 16, in contrast to the narrow space provided for deposition of ash in Applicant's Fig. 2. As shown below, with "A" representing the space in Rizzie and "B" the space in the present application, Rizzie does not teach a narrow annular opening between the outer wall of the ash separator (6) and the baffle plate (8).



Accordingly, for at least the reasons above, Applicant submits that claims 3, 5, 7, 9, 11, and 13 are patentable over Milner, Jennebach, Rizzie, Dueck, and Oiwa and requests the withdrawal of the rejection under 35 U.S.C. § 103(a) to said claims.

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over '909 in view of '653, '165, '806, and '149.

Claim 14 has been amended in a manner similar to claim 1 and is patentable over Milner, Jennebach, Rizzie, Dueck, and Oiwa for at least the same reasons as above. Claim 14 also includes the baffle plate limitation similar to that of claim 5, and is therefore patentable for at least the same reasons as above. In addition, claim 14 has been amended to recite that the depressions are disposed adjacent and parallel to a longitudinal grating. The grating of Milner is conical in shape and the depressions are not parallel to it but extend away from its base at two locations opposite one another.

Accordingly, Applicant respectfully requests the withdrawal of the rejection under 35 U.S.C. § 103(a) to claim 14.

Conclusion

Applicant has made a genuine effort to respond to each of the Examiner's objections and rejections in advancing the prosecution of this case. Applicant believes that all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested. If any additional issues need to be resolved, the Examiner is invited to contact the undersigned at his earliest convenience.

The Petition fee of \$555.00 is being electronically submitted herewith. Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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